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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,276	06/27/2001	David Rollo	ADAC19012	5224

7590

10/13/2004

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EXAMINER

JUNG, WILLIAM C

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 10/13/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/894,276

Applicant(s)

ROLLO ET AL.

Examiner

William Jung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 27, 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by *Logan et al* (US 4,873,632).

Claim 1: Logan et al anticipate all claimed invention in claim 1. Logan et al disclose of nuclear or gamma camera system where the pixel data or numerical values of the image are processed and store according to photopeaks in multiple energy windows with scatter corrector to correct or reduce scatter by combining the counts of the multiple windows. The scatter corrector or reducer is coupled to the image processor and image data storage (col. 3, lines 3-15; col. 5, lines 21-48; col. 5, lines 52-58).

Claims 8-12: Logan et al further disclose that the scatter correction algorithm includes mathematically combining by either additive or subtractive process (col. 10, line 67 – col. 11, line 34; col. 11, line 61 – col. 12, line 11) . Further more, the scatter corrector acts to correct the scatter on a pixel-by-pixel basis with typical X,Y coordinates of the two-dimensional image . The photopeak energy windows (bell curve) may overlap depending on the emission energy of the radionuclides.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2, 3, and 5 are under 35 U.S.C. 103(a) as being unpatentable over *Logan et al.*

Claims 2 and 3: Logan et al disclose that the gamma camera detector detects multiple photopeaks, whether the radionuclides emits single or dual energy, the detection allows dual energy source. Therefore, Logan et al's gamma camera renders obviousness to utilize two different radiation sources or radioactive carrier to detect the photopeaks (col. 5, lines 33-38). Logan et al further disclose that the background scatter of the radionuclides is lower than the high energy level main photopeaks (col. 5, lines 58-66).

Claim 5: Logan et al disclose of prior art where the nuclear or gamma camera is utilized with Thallium (Tl), Gallium. Indium, and technetium (Tc)(col. 1, lines 23-44).

5. Claims 4, 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Logan et al* as applied to claim 1-3 above, and further in view of *Chilton et al* (US 7,706,683).

Logan et al substantially disclose of all claimed invention in claims 4, 6, and 7. However, Logan et al do not disclose of the apparatus described above is applied in lung perfusion or stress analysis with Tc and Xe. Chilton et al further teaches that the Xe is an alternative radionuclides source that can be detected by the nuclear or gamma camera as described by Logan et al. Furthermore, Chilton et al teach that the radioactive gas, Xe, inhaled by a patient, fills the lung. The radioactivity of the Xe gas is detected with radioactive or nuclear

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camera for diagnostic procedure. The diagnostic information includes distribution of the gas in the lung (perfusion) (col. 1, lines 19-27) and the lung distress (or stress) (col. 3, lines 16-34).

Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply teachings of Chilton et al's application of Xe in lung perfusion and stress study/analysis with the nuclear or gamma camera apparatus described by Logan et al.

6. Claim 13-15, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Flanagan et al* (US 5,093,105) in view of *Logan et al*.

Claims 13, 15, 18, and 19: Flanagan et al substantially disclose of all claimed invention in claims 13, 15, 18, and 19. Flanagan et al disclose of lung perfusion study/imaging by introducing radiotracers into patient via inhalation where the radiotracers emit gamma radiation such as Tc-99m, ^{201}Tl , and ^{123}I (col. 1, lines 57-61; col. 2, lines 7-24). However, Flanagan et al lacks two distinct radioactive carrier introduced to the patient. Logan et al teaches that the gamma camera detector detects multiple photopeaks, whether the radionuclide emits single or dual energy, the detection allows dual energy source detection simultaneously. Therefore, Logan et al's gamma camera renders obviousness to utilize two different radiation source or radioactive carrier to detect the photopeaks simultaneously. Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply the teachings of Logan et al to improve the deficiency in the teachings of Flanagan et al.

Claims 14: Flanagan et al also disclose that the Tc-99m or $^{99\text{m}}\text{Tc}$ ligand is a macroaggregated albumin (MAA) (col. 4, lines 31-35).

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7. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Flanagan et al* and *Logan et al* as applied to claim 13 above, and further in view of *Chilton et al* (US 4,706,683).

Flanagan et al and Logan et al substantially disclose of all claimed invention in claims 16 and 17. Although Flanagan et al and Logan et al do not include gaseous radiotracer such as Xenon, Chilton et al teach of such improvement. Chilton et al disclose that the Xenon gas is administered to a patient by inhalation for lung perfusion study Col. 1, lines 19-27; col. 3, lines 16-42). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply the teachings of Chilton et al's Xenon gas administration to the teachings of Flanagan et al and Logan et al's lung perfusion imaging method to achieve the claimed invention.

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Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Madden et al (US 5,694,933), ***Madden et al*** (US 6,135,955), ***Layne et al*** (US 4,094,965), and ***Logan et al*** (IEEE Transactions on Medical Imaging).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Jung whose telephone number is 703-605-4364. The examiner can normally be reached on Mon-Fri 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denis Ruhl can be reached on 703-305-3256. The fax phone number for the organization where this application or proceeding is assigned is 703-308-0758.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1148.

WJS

November 18, 2003

Eleni Mantis Mercader
ELENI MANTIS MERCADER
PRIMARY EXAMINER
ART UNIT 3737